A. Course Objectives

1. To engage you in basic designs and analyses of educational research;
2. To study the basic research trends and issues in the teaching and learning of mathematics;
3. To identify and discuss problems associated with different research designs including statistical assumptions;
4. To synthesize and re-conceptualize research in mathematics education;
5. To describe areas of research most useful to advancing the teaching and learning of mathematics; and
6. To incorporate areas of research most useful at advancing the teaching and learning of mathematics into classroom practices.

B. Outline of Course Content

1. Research Design and Analysis
   a) Basic research designs (qualitative and quantitative)
   b) Statistical analysis
   c) Reliability and validity concerns

2. Research Trends and Issues in Mathematics Education - An Overview. Readings in Research Ideas for the Classroom. Such as:
   a) Cognitive and affective issues in mathematics education,
   b) Cooperative learning in mathematics,
   c) Ethnomathematics,
   d) Problem solving and metacognition in mathematics,
   e) Curriculum developments, and
   f) Assessment issues.
3. **Research Project - Development and Analysis**
   You will design and conduct a mini-study focusing on a current issue or curricular trend in your classroom or your school. You will work individually or with a partner in developing the design, conducting the study, and analyzing its results. The research design will be developed, data hypothesized, analyzed and reported online at the end of the semester.

4. **Critical Readers of Research in Mathematics Education**
   You will be directed to read and critique current and pertinent research in mathematics education (research articles to read will be online in blackboard or accessible online on InfoTrac), focusing on the manner in which the studies were designed, carried out, reported, and the statistical analysis that were made. You are expected to become a critical reader in order to properly analyze the qualitative and quantitative research contained in such research journals as: *Journal of Research in Mathematics Education, Journal of Educational Psychology, Journal of Educational Research, and Journal of Mathematical Behavior*. To successfully complete the course, it is important that you become a critical consumer of educational research.

C. **Required Texts**

*Introduction to Research in Education (with InfoTrac), (seventh edition)*
[www.wadsworth.com](http://www.wadsworth.com)

D. **Course Requirements**

A letter grade will be assigned based on the following requirements:

1. Write-ups of critical analyses of two assigned research readings.
2. Assignments in Blackboard, and InfoTrac College Edition online work.
3. The design, analysis and write-up of a research mini-project using hypothetical data.
4. Two online tests based on assigned readings and homework assignments from your required research textbook.

   To successfully complete the course you are expected to attain a master's level of scholarship in critiquing existing research publication in mathematics education, as well as in designing and analyzing a research mini-study of your own. You will also become familiar with some of the current research in mathematics education.
E. Course Evaluation

Each of the four Course Requirements (above) will have about equal weight. Therefore, each requirement will count 20% to 30% of your course grade. A letter grade will be assigned based on the following percent of total points obtained.

A: 100 – 90%  B: 89 – 80%  C: 79 – 70%  D: 69-60%  F: below 60%

F. Bibliography of Pertinent Work


**Weekly Schedule and Required Readings for Spring 2006**

**Ary:** *Introduction to Research in Education (6th edition)*

<table>
<thead>
<tr>
<th>Week of</th>
<th>Class Focus</th>
<th>Readings from Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASAP</td>
<td>The Nature of Scientific Inquiry</td>
<td>Ary: Chapter 1</td>
</tr>
<tr>
<td>ASAP</td>
<td>The Scientific Approach in Education</td>
<td>Ary: Chapter 2</td>
</tr>
<tr>
<td>ASAP</td>
<td>The Research Problem</td>
<td>Ary: Chapter 3</td>
</tr>
<tr>
<td>1/30</td>
<td>Action Research</td>
<td>Ary: Chapter 17</td>
</tr>
<tr>
<td>2/6</td>
<td>The Hypothesis</td>
<td>Ary: Chapter 5</td>
</tr>
<tr>
<td>2/13</td>
<td>Descriptive Statistics</td>
<td>Ary: Chapter 6 (pp136-154)</td>
</tr>
<tr>
<td>2/20</td>
<td>Sampling and Inferential Statistics <em>Research Critique # 1</em></td>
<td>Ary: Chapter 7</td>
</tr>
<tr>
<td>2/27</td>
<td>Tools of Research</td>
<td>Ary: Chapter 8 (pp 216-224)</td>
</tr>
<tr>
<td>3/6</td>
<td>Validity and Reliability</td>
<td>Ary: Chapter 9</td>
</tr>
<tr>
<td>3/13</td>
<td><strong>Test #1 (Chapters 1, 2, 3, 5, 6, 7, 8, 9, 17)</strong></td>
<td></td>
</tr>
<tr>
<td>3/27</td>
<td>Experimental Research</td>
<td>Ary: Chapter 10</td>
</tr>
<tr>
<td>4/3</td>
<td>Correlational Research</td>
<td>Ary: Chapter 13</td>
</tr>
<tr>
<td>4/10</td>
<td>Survey Research <em>Research Critique # 2</em></td>
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</tr>
<tr>
<td>4/17</td>
<td>Qualitative Research: Defining, Selecting, and Planning</td>
<td>Ary: Chapter 15</td>
</tr>
<tr>
<td>4/24</td>
<td><strong>Test 2 (Chapters 8, 9, 10, 13, 14, 15)</strong> Teachers Issues or Classroom Instruction</td>
<td></td>
</tr>
<tr>
<td>5/1</td>
<td>Project Presentations in Blackboard Teachers as Researcher</td>
<td></td>
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